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L1           374 S EF-2
L2         16705 S NEURODEGENER?
L3             0 S L1 AND L2
L4        878553 S NEURO?
L5            11 S L1 AND L4
L6          4177 S ELONGATION FACTOR
L7          4259 S L6 OR L1
L8            43 S L7 AND AD
L9            56 S DIPHTHAMIDE?
L10            0 S L9 AND NEURO?
L11            0 S L9 AND AD
L12            7 S L2 AND L7
L13        13283 S DIPHTHERIA?
L14            2 S L13 AND L2
L15          306 S L13 AND L4

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L17          144 S L16 AND L6
L18          583 S L13 AND ELDERLY
L19          434 S L18 AND NEURO?
L20          153 S L19 AND DEMENTIA

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Research report

Alzheimer's disease-associated reduction of polysomal mRNA translation

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Abstract

Polysomes from the frontal cortices of individuals who had histopathologically confirmed Alzheimer's disease were compared with polysomes from individuals who exhibited no neuropathological conditions. The cytosolic polysome yield from Alzheimer's disease frontal cortex was reduced 40% compared with that obtained from control frontal cortex. The translational activity per unit polysome of the Alzheimer's disease polysomes was only 50% of control in a reticulocyte lysate in vitro translation assay in which human polysomes do not undergo reinitiation. These differences exhibited brain region specificity in that polysomes isolated from Alzheimer's disease cerebellum were not different from control cerebellar polysomes. Thus, the disruptions are not due to a secondary and general response of the entire brain to the disease. These reductions were reflected by similar decreases in the translation of the mRNA for high molecular weight neurofilament polypeptide. Thus, the inhibition of polysomal mRNA translation is a mechanism by which gene expression is impaired in pathologically involved brain regions of individuals afflicted by Alzheimer's disease.

Author Keywords: Translational control; Alzheimer's disease; Polysome; Protein synthesis

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